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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/687,276	10/15/2003	Michael P. Caren	10021300-1	8973

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AGILENT TECHNOLOGIES, INC.  
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EXAMINER

SORKIN, DAVID L

ART UNIT PAPER NUMBER

1723

DATE MAILED: 12/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/687,276

Applicant(s)

CAREN ET AL.

Examiner

David L. Sorkin

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 17 October 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-29 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 October 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

**DETAILED ACTION**

***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1-29 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is unclear what is meant by "a structural member in said interior channel ... separate from said interior channel". It is unclear what should be considered "separate" for the purpose of the instant application. Page 9, gives example of the structure member being welded to the channel wall, attached by adhesive, coating and etching as examples of "separate". These examples are repugnant to the usual meaning of "separate".

***Claim Rejections - 35 USC §§ 102 and 103***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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5. Claims 1-3, 12 and 13 are rejected under 35 U.S.C. 102(b) as being anticipated by, or in the alternative under 103(a) as obvious over, Kellogg et al. (US 2002/0097632). Regarding claim 1, Kellogg ('632) discloses an apparatus for mixing fluids, said apparatus comprising a housing (100) having an interior channel (201,202,203) with capillary dimensions, said interior channel comprising a plurality of biopolymer features arranged in a predetermines manner on the interior surface thereof (see [0060] and [0062]); a structural member in said interior channel adjacent an end thereof, the dimensions of and placement of said structural member being sufficient such that intermittent application of centrifugal force to said interior causes movement of said fluid in said channel (see paragraphs [0039], [0046], [0047] and [0048]); and a mechanism that intermittently generates centrifugal force on the interior of said housing to cause movement of said fluid in said channel (see paragraph [0054]). While it is unclear what is being claimed, as discussed above, page 9, lines 19-23 of the instant application explain that a "coating" should be considered a "separate structural member". As explained in [0047] and [0048] of Kellogg ('632) the channel may be "coated" to provide "hydrophobic patches". Therefore, it is considered that the new separate elements limitation is also disclosed or suggested by the reference.

Regarding claim 2, said mechanism comprises a rotatable member (see paragraph [0037]). Regarding claim 3, said housing further comprises a mixing area in fluid communication with said channel (see Fig. 2). Regarding claim 12, a method of mixing a fluid comprises introducing a fluid into a housing of the apparatus discussed above with regard to claim 1 (see paragraph [0058]), and generating intermittent centrifugal

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force to cause movement of said fluid but insufficient to cause said fluid to exit said housing (see paragraphs [0039], [0046], [0047]). Regarding claim 13, the centrifugal force is generated by rotating said mechanism (paragraph [0039]).

6. Claims 4-11 and 14-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kellogg ('632) in view of Chee et al. (US 5,837,832). In the Regarding claims 4-6, Kellogg ('632) explains in [0060] and [0062] biopolymer features may be immobilized on the interior surface of the channel. However, it is not expressly stated that features form a linear microarray. Chee et al. ('832) teaches forming a linear microarray of biopolymer features (see col. 1, lines 19-24; col. 2 lines 26-37). It would have been obvious to one of ordinary skill in the art to have arranged the features of Kellogg ('632) in a linear microarray as taught by Chee ('832) to achieve the rapid and efficient detection capability explained by Chee in col. 7, lines 55-57. Regarding claim 7, Kellogg ('632) discloses an apparatus for conducting hybridization reactions, said apparatus comprising a housing (100) having an interior channel (201,202,203) with capillary dimensions comprising an array of biopolymers for conducting hybridization reactions and a mixing area (see paragraphs [0060] to [0062]); a structural member in said interior channel adjacent an end thereof, the dimensions of and placement of said structural member being sufficient such that intermittent application of centrifugal force to said interior causes movement of said fluid in said channel between said linear microarray and said mixing area (see paragraphs [0039], [0046], [0047]); and a mechanism that intermittently generates centrifugal force on the interior of said housing to cause movement of said fluid in said channel (see paragraph [0054]). While it is

unclear what is being claimed, as discussed above, page 9, lines 19-23 of the instant application explain that a "coating" should be considered a "separate structural member". As explained in [0047] and [0048] of Kellogg ('632) the channel may be "coated" to provide "hydrophobic patches". Therefore, it is considered that the new separate elements limitation is also disclosed or suggested by the reference. Kellogg ('632) explains in [0060] and [0062] biopolymer features may be immobilized on the interior surface of the channel. However, it is not expressly stated that features form a linear microarray. Chee et al. ('832) teaches forming a linear microarray of biopolymer features (see col. 1, lines 19-24; col. 2 lines 26-37). It would have been obvious to one of ordinary skill in the art to have arranged the features of Kellogg ('632) in a linear microarray as taught by Chee ('832) to achieve the rapid and efficient detection capability explained by Chee in col. 7, lines 55-57. Regarding claim 8, a dispensing device is disclosed (see paragraph [0065]). Regarding claim 9, said biopolymers are polynucleotides and polypeptides (see paragraphs [0058] to [0062]). Regarding claim 10, said mechanism comprises a rotatable support for rotating said housing to produce said centrifugal force (see paragraph [0030]). Regarding claim 11, said rotatable support is a circular tray driven by a motor (see paragraph [0030] and claim 17 of the reference). Regarding claim 14, a method of conducting chemical reactions comprises introducing a fluid into a housing of the apparatus discussed above with regard to claim 4 (see paragraph [0058]), and incubating said sample in said housing under conditions for carrying out said chemical reactions and during incubation generating intermittent centrifugal force to cause movement of said fluid but insufficient to cause said fluid to

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exit said housing (see paragraphs [0039], [0046], [0047]). Regarding claim 15, the centrifugal force is generated by rotating said mechanism (paragraph [0039]).

Regarding claim 16, Kellogg ('632) discloses a method for conducting hybridization reactions (see especially paragraph [0062], but also paragraphs [0061] and [0060]), said method comprising introducing a sample into a housing (100) comprising an array of features for hybridizing to analytes in said sample (see paragraphs [0060] to [0062]), said housing having internal capillary dimensions, a mixing area separate from said linear array (see paragraph [0060] and Fig. 2) and a structural member in said interior adjacent an end thereof, the dimensions and placement of said structural member being sufficient such that intermittent application of centrifugal force to said interior causes motion of said fluid therein (see [0039], [0046], [0047]); and incubating said sample in said housing under conditions for carrying out said hybridization reactions and during said incubation generating intermittent centrifugal force to cause reciprocal movement of said fluid between said linear array and said mixing area (see [0039], [0046], [0047]). Kellogg ('632) explains in [0060] and [0062] that biopolymer features may be immobilized on the interior surface of the channel. However, it is not expressly stated that features form a linear microarray. Chee et al. ('832) teaches forming a linear microarray of biopolymer features (see col. 1, lines 19-24; col. 2 lines 26-37). It would have been obvious to one of ordinary skill in the art to have arranged the features of Kellogg ('632) in a linear microarray as taught by Chee ('832) to achieve the rapid and efficient detection capability explained by Chee in col. 7, lines 55-57. Kellogg ('632) explains in [0060] and [0062] biopolymer features may be immobilized on the interior

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surface of the channel. However, it is not expressly stated that features form a linear microarray. Chee et al. ('832) teaches forming a linear microarray of biopolymer features (see col. 1, lines 19-24; col. 2 lines 26-37). It would have been obvious to one of ordinary skill in the art to have arranged the features of Kellogg ('632) in a linear microarray as taught by Chee ('832) to achieve the rapid and efficient detection capability explained by Chee in col. 7, lines 55-57. Regarding claim 17, the centrifugal force is generated by rotating said mechanism (paragraph [0039]). Regarding claims 18 and 20, the method further comprises, subsequent to said incubation, increasing said centrifugal force sufficient to cause said fluid to exit (see step f of claim 24 of the reference). Regarding claim 19, a wash fluid may be added (see [0055]). Regarding claim 21, the linear array is examined for results (see [0060]). Regarding claim 22, the housing is part of microfluidic system (see [0028]). Regarding claim 23, the housing is a channel in a microfluidic system (see [0028] and [0036])). Regarding claim 24, the features are biopolymers (see [0060] to [0062]). Regarding claim 25, said features are polynucleotides or polypeptides (see [0060] to [0062]). Regarding claim 26, Chee et al. (US 5,837,832) further teach the linear array having more than one thousand features (see col. 172, lines 51-52). Regarding claims 27-29, terms throughout the Kellogg ('632) like "assay", "detecting" and "detection cuvette" as well as the specific detection systems claimed in claims 19-22 of the reference would have suggested forwarding, transmitting and receiving data to one of ordinary skill in the art.



***Response to Arguments***

7. Applicant's pointing out of support in the specification for the amendments is appreciated.

8. While the examiner agrees with applicant that Kellogg ('632) does not expressly disclose the claimed "linear" microarray of biopolymers, Kellogg ('632) does explain in [0062] that strands of DNA or RNA may be immobilized on the channel interior surface.

9. The scope of the new limitation concerning "a structural member in said interior channel ... separate from said interior channel" is very confusing. Page 9, lines 19-23 of the instant application explain that a "coating" should be considered a "separate structural member". As explained in [0047] and [0048] of Kellogg ('632) the channel may be "coated" to provide "hydrophobic patches". Therefore, it is considered that the new separate elements limitation is also disclosed or suggested by Kellogg ('632).


10. Chee et al. (US 5,837,832) is relied upon as teaching a linear microarray of biopolymers containing more than 1000 "features".

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David L. Sorkin whose telephone number is 571-272-1148. The examiner can normally be reached on 9:00 -5:30 Mon.-Fri..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wanda L. Walker can be reached on 571-272-1151. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
David L. Sorkin  
Primary Examiner  
Art Unit 1723

DLS